

**REMARKS**

This response is intended to reply to the Office Action dated March 23, 2006. In view of the following amendments and discussion, the Applicants believe that all claims are in allowable form.

**OBJECTION**

The specification is objected as failing to provide proper antecedent basis for the claimed subject matter of claims 7-8 and 55. The Applicants submit that paragraph 7 and 42 clearly provide proper antecedent basis for the elements recited in claims 7-8 and 55. The Examiner's attention is directed to paragraph 7 (summary of the invention), line 3 from the bottom, stating "a plurality of quantum dots.....disposed about 110 nm or greater apart from one another" and paragraph 42, lines 5, stating "Selectively choosing the gaps 201 and 221 between the elongated structures 212 and 214, spaces 223 and 225 between adjacent quantum dots 222 may be fabricated in a range from about 110 nm or greater". However, in response, the Applicants have additionally amended paragraph 34 to provide antecedent basis for claims 7-8 and 55, and claims 7-8 to more clearly recite the aspect of the invention. No new matters have been entered. Accordingly, the Applicants submit that the specification provide proper antecedent basis for the claimed subject matter and respectfully request the objection withdrawn.

**CLAIM REJECTION**

**35 U.S.C. §112      Claim 9**

Claim 9 stands rejected under 35 U.S.C. § 112, first paragraph. In response, the Applicants have amended claim 9 by replacing the term "elongated aperture" with the term "elongated structure." Accordingly, the Applicants respectfully request the rejection withdrawn and claims allowed.

**35 U.S.C. §112      Claims 11 and 27-63**

Claims 11 and 27-63 stand rejected under 35 U.S.C. § 112, second paragraph. In response, the Applicants have amended claim 11 and 27 to more clearly recite the aspect of the invention. Accordingly, the Applicants respectfully request claims 11 and 27, and all claims depending therefrom, be withdrawn and claims allowed.

**35 U.S.C. §102      Claims 1-2, 12 and 23-24**

Claims 1-2, 12 and 23-24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 6,989,333 issued January 24, 2006, to *Watanabe, et al.*, (hereinafter referred to as *Watanabe*). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested by *Watanabe*. *Watanabe* teaches disposing a photoresist layer on a substrate to define patterned features on the substrate. The photoresist layer is exposed to a first energy beam. The first exposed photoresist layer is then developed to form desired patterned features. Subsequently, the patterned photoresist layer is exposed to a second energy beam. The second exposed photoresist layer is further developed to trim the patterned features on the substrate into a desired narrower dimension. In short, *Watanabe* teaches a *lithography process* by two times exposure and development process of a *photoresist* layer to form patterned features on a substrate. *Watanabe* does not teach or suggest forming a first *hard mask* having at least one elongated structure on the layer, *laterally etching* at least one elongated structure of the first hard mask prior to etching the layer, *etching the layer through the first hard mask* to form an elongated layer feature, and removing the first hard mask, as recited by claim 1.

“Anticipation requires the presence in a single prior art reference disclosure of *each and every element* of the claimed invention, arranged as in the claim.” *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). Here, *Watanabe* fails to disclose each and every element of the claimed invention recited by independent claim 1.

Thus, the Applicants submit that independent claim 1 and all claims depending therefrom, are patentable over *Watanabe*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**35 U.S.C. §103      Claims 13-22**

Claims 13-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Watanabe* in view of United States Patent No. 6,366,730 issued April 2, 2002, to *Cappuzzo, et al.*, (hereinafter referred to as *Cappuzzo*). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested by the combination of *Watanabe* and *Cappuzzo*. The teaching of *Watanabe* has been discussed above. *Cappuzzo* teaches using a heater strip as an etch mask to define at least part of upper cladding structures. However, *Cappuzzo* fails to teach or suggest a modification to *Watanabe* that would yield forming a first **hard mask** having at least one elongated structure on the layer, **laterally etching** at least one elongated structure of the first hard mask prior to etching the layer, **etching the layer through the first hard mask** to form an elongated layer feature, and removing the first hard mask, as recited by claim 1. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest all the elements.

Thus, the Applicants submit that independent claim 1 and claims 13-22 depending therefrom, are patentable over the combination of *Watanabe* and *Cappuzzo*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

**DOUBLE PATENTING**

Claims 18-22 stand objected to under 37 CFR 1.75 as being a substantial duplicate of claims 13-17. In response, the Applicants have amended claim 18 to more clearly recite the aspects of the invention. Accordingly, the Applicants submit that claim 18 and, claims 19-22 depending therefrom, are not duplicated claims of claims 13-17 and respectfully request retain the pendency of claims 18-22.

**ALLOWED CLAIMS**

The Applicants thank the Examiner for indicating the allowability of claims 27-63. In response, the Applicants have amended claim 27 to overcome the rejection under 35 U.S.C. 112, second paragraph, as set forth above. Additionally, the Applicants also thank the Examiner for indicating the allowability of claims 3-6, 10 and 25-26 if rewritten in independent from. However, in light of the reasons and discussion above, the Applicants believe all claims are allowable over the prior art of record. Thus, the Applicants respectfully request all independent claims and claims depending therefrom allowed.

**CONCLUSION**

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited.

If, however, the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Mr. Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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